



# Indra Ganesan

## COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai  
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

# NAAC DOCUMENTS

## QUALITY INDICATOR FRAME WORK

### CRITERION – 2

## TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

# IQAC

INTERNAL QUALITY ASSURANCE CELL

## INDRA GANESAN COLLEGE OF ENGINEERING





**Indra Ganesan**  
**COLLEGE OF ENGINEERING**

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012  
Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennai  
NAAC Accredited, 2(F) Status Institution by UGC



# 2018-2019

<b>Criteria 2</b>	<b>Teaching-Learning and Evaluation</b>	<b>350</b>
-------------------	---	------------

**Key Indicator-Experiential Learning Method (90)**

**DEPARTMENT OF ELECTRICAL AND  
ELECTRONICS ENGINEERING**



# Indra Ganesan

## COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai  
NAAC Accredited, 2(F) Status Institution by UGC



### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

S.No	Project Title	No Students
1	CLOSED LOOP POWER CONVERSION EFFICIENCY IMPROVEMENT OF AC-DC BOOST CONVERTER USING 1:1 TRANSFORMER	04
2	AN IMPROVED CUK CONVERTER WITH OPTIMIZED PSO TYPE-III CONTROLLER	03
3	DESIGN AND PERFORMANCE ANALYSIS OF A FIVE LEVEL ASYMMETRIC CASCADE H BRIDGE	04
4	MITIGATION OF HARMONICS USING SHUNT-SERIES ACTIVE POWER FILTER FOR POWER QUALITY ENHANCEMENT	04
5	PARTIAL POWER DC-DC CONVERTER FOR FAST BATTERY CHARGING WITH REDUCED LOSS	03
6	AN ENERGY CONSERVATION USING 360 DEGREE PIR SENSOR BY ARDUINO MICROCONTROLLER	04

**CLOSED LOOP POWER CONVERSION EFFICIENCY  
IMPROVEMENT OF AC-DC BOOST CONVERTER  
USING 1:1 TRANSFORMER**

**A PROJECT REPORT**



*Submitted by*

<b>ASHOKRAJ.V</b>	<b>(811215105003)</b>
<b>GAYATHRI.R</b>	<b>(811215105009)</b>
<b>MANIKANDAN.M</b>	<b>(811215105016)</b>
<b>SATHEESWARI.P</b>	<b>(811215105027)</b>

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**CLOSED LOOP POWER CONVERSION EFFICIENCY  
IMPROVEMENT OF AC-DC BOOST CONVERTER  
USING 1:1 TRANSFORMER**

**A PROJECT REPORT**



*Submitted by*

**ASHOKRAJ.V (811215105003)  
GAYATHRI.R (811215105009)  
MANIKANDAN.M (811215105016)  
SATHEESWARL.P (811215105027)**

*in partial fulfillment for the award of the degree  
of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**ANNA UNIVERSITY: CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "CLOSED LOOP POWER CONVERSION EFFICIENCY IMPROVEMENT OF AN AC-DC BOOST CONVERTER USING 1:1 TRANSFORMER" is the Bonafide work of "V.ASHOKRAJ, R.GAYATHRI, M.MANIKANDAN, P.SATHEESWARI" who carried out the project work under my supervision.

  
**SIGNATURE**

Mr.O.KARTHIKEYAN B.Tech., M.E

**HEAD OF THE DEPARTMENT**

Associate Professor,

Department of EEE,

Indra Ganesan College of Engineering,

Trichy-12.

  
**INTERNAL EXAMINER**

  
**SIGNATURE**

Mr.P.NIRMALKUMAR B.E., M.E

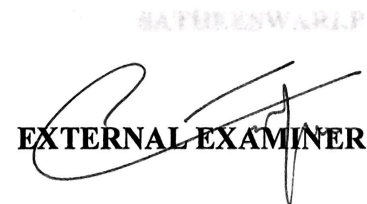
**SUPERVISOR**

Assistant Professor,

Department of EEE,

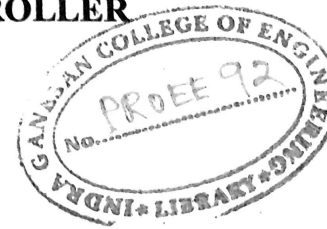
Indra Ganesan College of Engineering,

Trichy-12.

  
**EXTERNAL EXAMINER**

**AN IMPROVED CUK CONVERTER WITH  
OPTIMIZED PSO TYPE-III CONTROLLER**

**A PROJECT REPORT**



*Submitted by*

**GAJALAKSHMI.B (811215105008)**

**MEENAKSHI.P (811215105018)**

**VANITHA.S (811215105039)**

**VIGNESHWARAN.N (811215105041)**

*in partial fulfillment for the award of degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

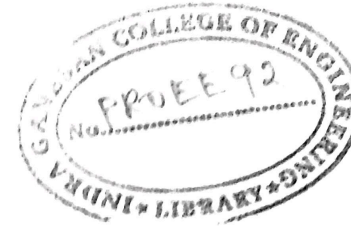
**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**AN IMPROVED CUK CONVERTER WITH  
OPTIMIZED PSO TYPE-III CONTROLLER**

**A PROJECT REPORT**



*Submitted by*

**GAJALAKSHMI.B (811215105008)**

**MEENAKSHI.P (811215105018)**

**VANITHA.S (811215105039)**

**VIGNESHWARAN.N (811215105041)**

*in partial fulfillment for the award of degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

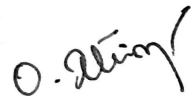
**MARCH 2019**



**ANNA UNIVERSITY : CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report “AN IMPROVED CUK CONVERTER WITH OPTIMIZED PSO TYPE-III CONTROLLER” is the bonafide work of “GAJALAKSHMI.B, MEENAKSHI.P, VANITHA.S, VIGNESHWARAN.N” who carried out the project work under my supervision.



**SIGNATURE**

Mr.O.Karthikeyan B.Tech.,ME.,

**Head of the Department**

Associate professor

Electrical and Electronics Engineering

Indra Ganesan College of Engineering

Trichy 620 012.



**SIGNATURE**

Mr.A.Richards Rethinasamy BE., ME.,

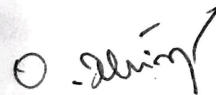
**Supervisor**

Assistant professor

Electrical and Electronics Engineering

Indra Ganesan College of Engineering

Trichy 620 012.



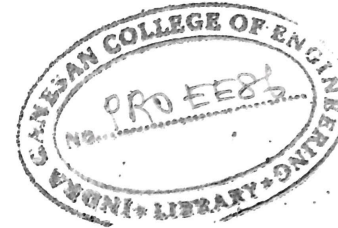
**INTERNAL EXAMINER**



**EXTERNAL EXAMINER**

**DESIGN AND PERFORMANCE ANALYSIS OF A FIVE  
LEVEL ASYMMETRIC CASCADE H BRIDGE  
INVERTER**

**A PROJECT REPORT**



*Submitted by*

**GOMATHY.M (811215105011)**  
**JERALD FELIX.A (811215105014)**  
**MEENA.S (811215105017)**  
**PRASANTH.R (811215105022)**

*in partial fulfillment for the award of degree*

*Of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

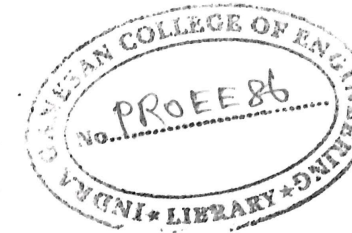
**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**DESIGN AND PERFORMANCE ANALYSIS OF A FIVE  
LEVEL ASYMMETRIC CASCADED H BRIDGE  
INVERTER**

**A PROJECT REPORT**



*Submitted by*

<b>GOMATHY.M</b>	<b>(811215105011)</b>
<b>JERALD FELIX.A</b>	<b>(811215105014)</b>
<b>MEENA.S</b>	<b>(811215105017)</b>
<b>PRASANTH.R</b>	<b>(811215105022)</b>

*in partial fulfillment for the award of degree*

*Of*

**BACHELOR OF ENGINEERING**

*In*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY: CHENNAI 600 025**

**MARCH 2019**

**BONAFIDE CERTIFICATE**

Certified that this project report title **“DESIGN AND PERFORMANCE ANALYSIS OF A FIVE LEVEL ASYMMETRIC CASCADE H BRIDGE INVERTER ”** is the bonafide work of **“GOMATHY.M, JERALD FELIX.A, MEENA.S, PRASANTH.R”** Who carried out the project work under my supervision.



**SIGNATURE**

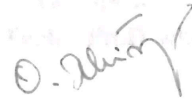
**Mr.A.Thangaraju M.E**

Assistant professor,

Electrical and Electronics Engineering

Indra Ganesan College of Engineering

Trichy 620 012



**SIGNATURE**

**Mr.O.Karthikeyan B.Tech.,M.E**

Assistant professor,

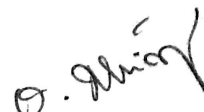
Electrical and Electronics Engineering

Indra Ganesan College of Engineering

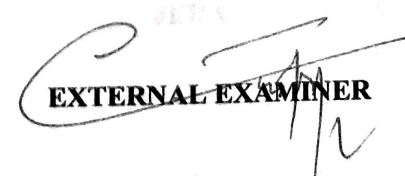
Trichy 620 012

You are hereby certified that the project work was carried out by the students and technicians for their respective marks and project a successful one.

For the above work, the project report is enclosed and the same is to be used for the project report. The project report is to be submitted to the project supervisor of the project.



**INTERNAL EXAMINER**



**EXTERNAL EXAMINER**

**MITIGATION OF HARMONICS USING SHUNT-SERIES  
ACTIVE POWER FILTER FOR POWER QUALITY  
ENHANCEMENT**

**A PROJECT REPORT**



*Submitted by*

<b>C.FATHIMASELVI</b>	<b>(811215105007)</b>
<b>M.SATHYAPRIYA</b>	<b>(811215105030)</b>
<b>R.VIJAYALAKSHMI</b>	<b>(811215105342)</b>

*In partial fulfillment for the award of degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

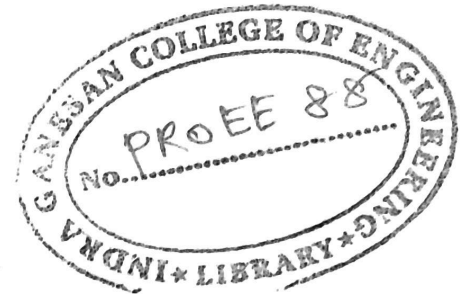
**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**MITIGATION OF HARMONICS USING SHUNT-SERIES  
ACTIVE POWER FILTER FOR POWER QUALITY  
ENHANCEMENT**

**A PROJECT REPORT**



*Submitted by*

<b>C.FATHIMASELVI</b>	<b>(811215105007)</b>
<b>M.SATHYAPRIYA</b>	<b>(811215105030)</b>
<b>R.VIJAYALAKSHMI</b>	<b>(811215105042)</b>

*In partial fulfillment for the award of degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

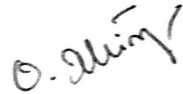
**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**BONAFIDE CERTIFICATE**

Certified that this project report title “MITIGATION OF HARMONICS USING SHUNT - SERIES ACTIVE POWER FILTER FOR POWER QUALITY ENHANCEMENT” is the bonafide work of “FATHIMASELVI.C, SATHYAPRIYA.M, VIJAYALAKSHMI.R” who carried out the project work under my supervision.



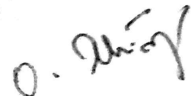
**SIGNATURE**

**Mr.O.KarthikeyanB.Tech.,ME.,**  
Head of the Department,  
Electrical and Electronics Engineering,  
Indra Ganesan College of Engineering,  
Trichy 620 012.



**SIGNATURE**

**Dr.G. Malathi ME., Ph.D.,**  
Professor,  
Electrical and Electronics Engineering,  
Indra Ganesan College of Engineering,  
Trichy 620 012.



**INTERNAL EXAMINER**



**EXTERNAL EXAMINER**

MARCH 2019

ANNA UNIVERSITY : CHENNAI 600 025

INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY

ELECTRICAL AND ELECTRONICS ENGINEERING

*in*

BACHELOR OF ENGINEERING

*of*

*in partial fulfillment for the award of the degree*

M.VARATHARAJU (811215105301)

A.SIVASAKTHI (811215105034)

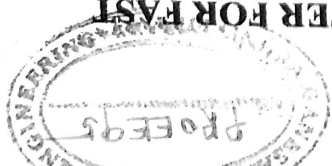
M.GUNASEELAN (811215105013)

V.ANAND (811215105002)

*Submitted by*

A PROJECT REPORT

PARTIAL POWER DC-DC CONVERTER FOR FAST  
BATTERY CHARGING WITH REDUCED LOSS



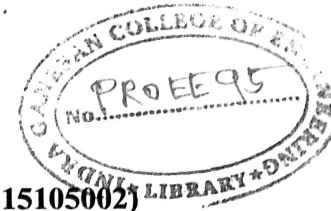


**PARTIAL POWER DC-DC CONVERTER FOR FAST  
BATTERY CHARGING WITH REDUCED LOSS**

**A PROJECT REPORT**

*Submitted by*

<b>V.ANAND</b>	<b>(811215105002)</b>
<b>M.GUNASEELAN</b>	<b>(811215105013)</b>
<b>A.SIVASAKTHI</b>	<b>(811215105034)</b>
<b>M.VARATHARAJU</b>	<b>(811215105301)</b>



*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

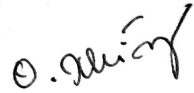
**ANNA UNIVERSITY : CHENNAI 600 025**

**MARCH 2019**

**ANNA UNIVERSITY : CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

**Certified that this project report "PARTIAL POWER DC-DC CONVERTER FOR FAST BATTERY CHARGING WITH REDUCED LOSS" is the bonafide work of V.ANAND,M.GUNASEELAN,A.SIVASAKTHI,M.VARATHARAJU who carried out the project work under my supervision.**



**SIGNATURE**

Mr.O.Karthikeyan B.Tech.M.E.,

**HEAD OF THE DEPARTMENT**

Associate Professor,

Department of EEE,

Indra Ganesan College of Engg,

Trichy- 620 012.



**SIGNATURE**

Mr.D.Praveen Sangeeth Kumar M.Tech.,

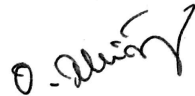
**SUPERVISOR**

Assistant Professor,

Department of EEE,

Indra Ganesan College of Engg,

Trichy- 620 012.



**INTERNAL EXAMINER**



**EXTERNAL EXAMINER**

**AN ENERGY CONSERVATION USING 360 DEGREE  
PIR SENSOR BY ARDUINO MICROCONTROLLER**

**A PROJECT REPORT**

*Submitted by*

**BALACHANDRAN. M (811215102004)**  
**BHUVANESWARI .A (811215105005)**  
**DEEPARAGAVI.M (811215105006)**  
**NIVETHA. B (811215105021)**



*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY: CHENNAI 600 025**

**MARCH 2019**

**AN ENERGY CONSERVATION USING 360 DEGREE  
PIR SENSOR BY ARDUINO MICROCONTROLLER**

**A PROJECT REPORT**

*Submitted by*

**BALACHANDRAN. M (811215102004)**  
**BHUVANESWARI .A (811215105005)**  
**DEEPARAGAVI.M (811215105006)**  
**NIVETHA. B (811215105021)**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

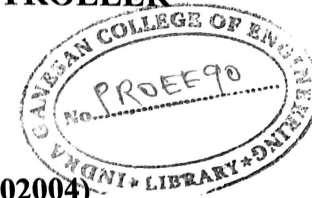
*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**INDRA GANESAN COLLEGE OF ENGINEERING, TRICHY**

**ANNA UNIVERSITY: CHENNAI 600 025**

**MARCH 2019**



ACKNOWLEDGEMENT

ANNA UNIVERSITY: CHENNAI 600 025

**BONAFIDE CERTIFICATE**

Certified that this project report "AN ENERGY CONSERVATION USING 360 DEGREE PIR SENSOR BY ARDUINO MICROCONTROLLER " is the bonafide work of "BALACHANDRAN.M, BHUVANESWARIA, DEEPARAGAVI. M, NIVETHA. B," who carried out the project work under my supervision.

  
**SIGNATURE**

**Mr.O.Karthikeyan B.Tech., M.E.,**  
Head of the Department  
Associate Professor,  
Electrical and Electronics Engineering,  
Indra Ganesan College of Engineering,  
Tiruchirappalli - 620 012.

  
**SIGNATURE**

**Mr.S. Vijai B.E., M.E.,**  
Supervisor  
Assistant Professor,  
Electrical and Electronics Engineering,  
Indra Ganesan College of Engineering,  
Tiruchirappalli - 620 012.

  
**INTERNAL EXAMINER**

  
**EXTERNAL EXAMINER**